

## **Proposed Improvement of Service Quality in Television Subscribe With Six Sigma Approach**

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**ABSTRACT :** To improve the quality of television service subscribed by XYZ Television Subscribe conducted research using the Six Sigma application aimed at reducing the defect from 3.4 defective per million opportunities and, prioritizing technical response actions and generating strategic recommendations that the company should take to improve the quality of XYZ Television Subscribe services, to identify subscription television dimensions valued by customers with the SERVQUAL approach and Six Sigma where customers are asked to evaluate performance from 5-dimensional service properties like Tangible, Reliability, Responsive, Assurance. The Alpha coefficient of reliability is 0.122 compared to Table r with N = 30 (r Table 0.367). So, Alpha = 0.971 > 0.367 which means the instrument has reliable research. Overall, it can be interpreted that the process capacity of service at XYZ Television Subscribe is average at 2.06 sigma, with the DPMO 291357.142 and service satisfaction level of 71%. The biggest sigma level is on the Responsiveness dimension of 2.30 sigma with the DPMO value of 212500 and satisfaction level as much as 78%, and the sigma level is the dimension of Empathy dimension that is equal to 1.98 sigma with the value of DPMO equal to 316666.666 and level of satisfaction equal to 68%. By designing a great company business process to provide an overview of the flow of information from the service business processes observed to obtain recommendations for quality improvement on assurance and empathy dimensions, namely; the warranty of the goods is given according to the procedure and the willingness to call the user suddenly.

**KEYWORDS** - Six Sigma, Customer Needs, Service Quality, Pay TV Industry.

### **I. INTRODUCTION**

Along with the ever-expanding technological advancement and breaking of many aspects of global life, business growth and competition among the services of a subscription TV company are expanding rapidly. This further encourages the spirit of subscribing TV companies to become better and market leaders in the subscription TV industry in Indonesia.

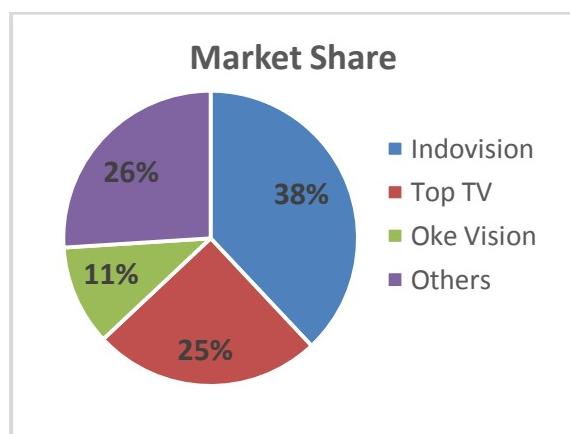


Fig.1. Market Share Television Subscription

Pay TV came in Indonesia in the early 90's and pioneered by XYZ Television Subscribe which launched the product. XYZ Television Subscribe is the first satellite television distributor licensed Distributor Company in Indonesia, formerly known as XYZ Television Subscribe. By the end of 2016, the number of XYZ Television Subscribe has reached 2.4 million subscribers so XYZ Television Subscribe is now a leader in subscription television market in Indonesia



Fig.2. The Number of Customers XYZ Television Subscribe Period 2011-2016

While XYZ Television Subscribe has made various efforts to improve the quality of the best

service for consumers, there is still a problem that customer complaints about the quality of services provided by *XYZ Television Subscribe* to customers feel they are not in line with what the user expects. In 2016 *XYZ Television Subscribe* Branch Jakarta has increased sales and revocation of the device presented in the following figures.

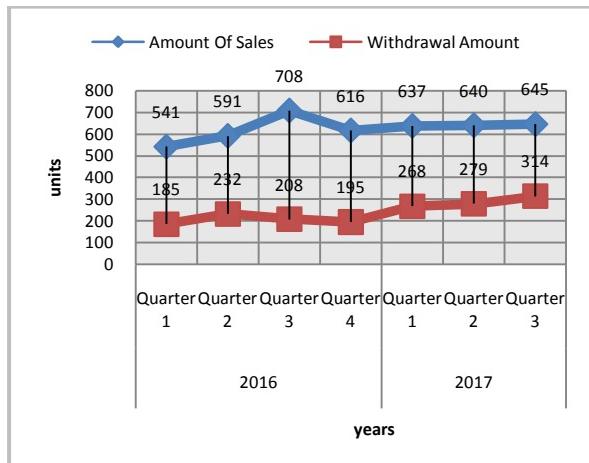


Fig.3.Total Sales and Withdrawal of Hardware (Subscribers Unsubscribe) PAY TV *XYZ Television Subscribe* Jakarta Branch Year 2016 - 2017

By looking at the situation it is realized that, besides the capability and reliability of a product offered to customers, it is also necessary to support the after-sales service to the customers. Customer satisfaction orientation is a key destination to be paid attention by paid television industry suppliers, so customers can be loyal in the long run. Basically, customer satisfaction and dissatisfaction with the products offered have an impact on the pattern of the next behavior. Customer satisfaction can make customer loyalty or loyalty to a company that provides excellent service and quality. Loyalty indicators include the attitude of choosing a product even though transaction costs rise, suggestions on others and the attitude of choosing a product even when it comes to competing products [1]. The customers who have achieved satisfaction are very likely to inform friends and others they get the company's products or services. In contrast to a dissatisfied customer, unsatisfied customers can unilaterally disable them to unsubscribe and may just take action that may damage the company's image. Customer satisfaction surveys are inseparable from the service quality dimensions so far as paid TV providers to customers. User loyalty depends on the experience of the user experience in using the company's services [2].

To create customer satisfaction, the products offered by the company must be eligible. Quality reflects all dimensions of product offerings that

generate benefits to customers. In the service industry stated that dissatisfaction is one of the causes of switching customers [3]. Satisfied users tend to be loyal customers [4]. Level of customer satisfaction will be followed by the level of loyalty of the user. Quality is a very important thing to note by companies who want to survive in today's increasingly fierce industrial competition. Companies that prioritize the quality of the products or services offered to attract customers to continue using the product or service. In determining the quality of product or service expectations, customers play a very important role. The suitability between the quality of expectations and the actual quality seen by the customer is the value of customer satisfaction with the product or service. Although customer dissatisfaction will arise if it turns out the actual quality of the product or service does not meet customer expectations. Delivery of quality services today is considered as an essential strategy for successful and secure companies [5]. The implementation of quality management in the service industry is a basic necessity if you want to compete in the domestic market especially in the global marketplace [6]. This is because the quality of service can contribute to customer satisfaction, market, and profitability. Providing satisfaction to these customers is done by all types of businesses, including paid television industry services. However, the knowledge available to measure the quality of paid TV services is not enough.

The dimensions of key service quality have been studied many times in other industries; such as telecommunications [7][8], transportation [9][10][11], health [12]. Customer satisfaction is defined as a sense of customer's satisfaction after comparing it to its expectations. If the company's performance is below the expectation of the customer then the user will be disappointed and vice versa. So it can be concluded that satisfaction is the response to the fulfillment of consumer needs. According to customer satisfaction [13], customer satisfaction is influenced by four factors: product and service feature, consumer emotion, a supporter of success and failure of service and perception of consumer justice. Comparing the expectations and feelings of consumers after the purchase of a product is the best way to measure customer satisfaction [14][15][16][17]. An organization can be defined as a world-class organization if they implement Six Sigma in every process [18]. Six Sigma widely implemented in various Quality Management Programs has been recognized by world-class organizations. In addition, Six Sigma is also known as an important business and operations of excellence [19]. Motorola was the pioneer and the first company to use the Six Sigma method in the 1980s. Their engineer, Bill Smith, voiced the idea of this method

to improve their product quality management. Statistically, the goal of Six Sigma is to reduce the defective stage from 3.4 defect per one million opportunities (DPMO) or almost error-free [20][21][22][23]. Six Sigma in a business perspective focuses more on meeting expectations and enhancing customer satisfaction [24][25] by enhancing the effectiveness and efficiency of all operations [26].

Manufacturing industry, world-class transnational organizations such as Motorola, General Electric, Sony [19], Samsung, Hyundai [27] have succeeded greatly by increasing customer satisfaction [19] high and improve their work processes, improve worker skills and change cultures [28]. In the service industry, large companies such as American Express, City Bank, Zurich Financial Services [19], Korea Telecom [27], City Group [29] and others have succeeded and benefited of the Six Sigma quality management program. On this basis, *XYZ Television Subscribe* needs to improve the quality of TV pay service to compete with its competitors and avoid any protests or complaints from customers. Based on the problems faced, it is necessary to conduct an investigation that aims to assess the quality of service in *XYZ Television Subscribe* using the Service Quality (SERVQUAL) method and advised to improve service quality in service attributes that are prioritized using the Six Sigma.

## **II. EXPERIMENTAL PROCEDURE**

This study uses quantitative approaches. Based on data collection and information technique, this study uses two types of data: primary data and secondary data. Primary data was obtained through a review [30]. The reasons for selecting survey techniques are limited time and cost, and characteristics of respondents according to research problems [31]. There are some steps taken in this study. The first is to identify the nature of the subscription television that the user considers important. Next is to measure user satisfaction with the Gap Method approach where users are asked to evaluate the performance of product attributes that have been identified in the first stage and then compare whether there is a gap between them. In determining whether a product attribute that a user considers to have a linear influence on customer satisfaction will be tested again by a simple linear regression analysis.

There are 22 service quality determinants that are summarized into five dominant factors or better known as SERVQUAL [17]:

- Reliability is the ability to deliver the promised service with certainty and accuracy. In a broad sense, reliability means that the company

provides supply promise, problem solving and price.

- Responsiveness is a willingness to help customers and provide services quickly. This dimension emphasizes attention and accuracy when handling customer requests, inquiries and complaints.
- A Guarantee is the knowledge, morals, and ability of employees to generate confidence and trust. This dimension may be important for services that require high confidence.
- Empathy (empathy) is a personal concern and attention given to customers. The essence of the dimension of empathy is to show customers through the services rendered that the customer is special, and their needs can be understood and fulfilled.
- Intangible (tangible) namely the emergence of physical facilities, equipment, workers, and buildings. This dimension describes the physical form and service that users will receive. Critical aspects of Six Sigma's practice of structural roles, structured repairs and focusing on metrics has been identified [32].

Six Sigma is defined in four relevant elements that are parallel mesostructures, repair experts, structured methods, and performance metrics [33]. The key success factors in Six Sigma such as committed leadership, the use of top talent in the role of Six Sigma, and provisional supporting infrastructure state that the management of engagement and commitment organization; project selection, management, and control skills; promote and accept cultural change; and continuous education and training is a major success factor in Six Sigma [34]. It reviews Six Sigma in leadership, customer focus, structured improvement procedures and focuses on metrics.

Other important success factors to ensure long-term organizational survival, the aim is to understand and incorporate customer needs and expectations [35][36][37]. For designing products or services, organizations need to emphasize current and future customer needs [36]. Customers will demand better quality products or services on a continuous basis, and to meet their expectations, organizations should adopt various approaches [23]. In connection with that, Six Sigma is one of the well-known approaches that can be used to meet customer requirements. This is because customer focus plays an important role in achieving continuous quality improvement [38] customer satisfaction and value [39]. Six Sigma emphasizes the policy on customer's voice. Therefore, every proposal, requirement or information from the customer will consider [40] and it will become a competitor in the pursuit of excellence of a business [29].

Step Six Sigma as follows:

#### **Define (D)**

This step is the initial step of the Six Sigma quality improvement program. At stage level there are 2 things to do:

- a. Determining the core process.

The core process is a network that usually includes various departments (products, services, support, information) to external customers [39]. Choosing the Six Sigma theme first is to consider and explain the purpose of the core process to evaluate.

- b. Specify the customer's specific needs.

Identify the most important players in all processes, ie customers. This work makes the voice of the customer (voice to the customer - VOC) to be challenging [39]. In determining the customer's specific needs is to understand and distinguish between the two categories, namely product requirements and service requirements. The output requirements relate to the features and/or features of the final product (goods and/or services) sent to the customer at the end of the process.

#### **Measure (M)**

In the Six Sigma Quality Improvement program, there are 3 things you can do at this stage [41]:

- a. Exam Questionnaire

The questionnaires were tested including reliability and validation tests. The reliability test aims to determine the reliability level of the questionnaire, while the validity test aims to determine whether an instrument can measure what is desired.

- b. Main quality features

The key quality characteristics (CTQs) set should be directly related to customer-specific requirements derived directly from output and service requirements. Regardless of the quality of the selected and prescribed quality, each of the features corresponds to the definition of an initial goal of continuous quality improvement program ie to improve customer satisfaction (external efficiency) and may reduce defects to zero defect.

- c. Basic performance measurement

Improved quality with defined Six Sigma will focus on enhancing the quality towards zero defect, thus giving full customer satisfaction. Then we must know the current performance level or in the Six Sigma term referred to as the baseline of performance. In other words, the objective consists of measuring the actual performance of the process to define its actual state.

#### **Analysis (A)**

Analysis is the third operation in the quality improvement program. There are 2 things to do: [41]:

- a. Determine the quality variables that become the priority of improvement to customers. Measurement aims to determine the extent to which the final output of the process is to meet the specific needs of the customer before the product is delivered to the customer.
- b. Measurement of performance lines at the revenue stages is performed directly to customers who receive output (products and services).

#### **Improve (I)**

As soon as the causes and causes of quality problems are identified, it is necessary to set up an action plan to improve the quality of Six Sigma. Basically, the action plan will explain resource allocations as well priorities and/or alternatives made in the implementation of the plan [41].

#### **Control (C)**

Control is the last stage of operation in improving Six Sigma quality. At this stage, the improvement of a quality is documented and disseminated, successful best practices in improving the standardization and dissemination process, procedures are documented and guided by standard work, and responsibility is given from the Six Sigma Team to the responsible Six Sigma Project [41].

The relationship between customer data and technical information is important to determine the target value set for each technical requirement to ensure the next generation of products is truly competitive and satisfying in accordance with customer needs and requirements [42]. To use a customer's voice, the selection of competitors and technical requirements will also determine the right decision. Because the results of each section will affect the results from other parts, then choosing the right parameters at the beginning of each section becomes very important to produce the best results. After all needs are identified, it is important to answer what product designs need to be done to meet the needs and to help make trading decisions to process [43].

### **III. RESULT AND DISCUSSION**

#### **Test of Questionnaire Statistics**

In the pilot test questionnaire as many as 30 respondents tested the validity and reliability statistics against the subscription tv and service using IBM SPSS Statistics 21 software.

**Table 1.**  
Product Attributes of Pay Television

No	Indicator	Dimensions	Code
1	Neat and clean employee appearance		T1
2	Variations of transportation type		T2
3	The location of the central office that is easy to reach		T3
4	Office equipment		T4
5	Layout of worship and its facilities	Tangibles	T5
6	Availability of product specification books		T6
7	Parking space availability and safe		T7
8	Availability of warehouse and supporting facilities		T8
9	Meeting room availability		T9
10	Engineer related product presentation		r1
11	Engineer capabilities related to the product it holds		r2
12	The ability of engineers to provide product related solutions	Reliability	r3
13	The ability of the engineer to provide the right offer		r4
14	The ability of the engineer to give the right time		r5
15	Quick response to problems that consumers find		res 1
16	Willingness and ability of employees to provide solutions to consumer problems		res 2
17	Availability and willingness of the employee if there is a problem	Responsiveness	res 3
18	Willingness and ability of employees to provide information about services		res 4
19	Provide compensation for products that do not meet specifications		as 1
20	Provide safe packing of goods		as 2
21	Completeness of documents and certificates of each item		as 3
22	Standards in accordance with industry developments and demands	Assurance	as 4
23	There is a guarantee related to the goods provided in accordance with the procedure		as 5
24	Provide product reliability in accordance with quality satadart		as 6
25	Readiness called consumers suddenly		em 1
26	Company information service is easy to contact	Empathy	em 2
27	Friendliness and courtesy of the employee serving the consumer		em 3

**Table 2.**

Validity Test of pay Television Products

No	Indicator	Score	r Count	Summary
1	T1	0.633	0.367	Valid
2	T2	0.99	0.367	Valid
3	T3	0.33	0.367	Invalid
4	T4	0.193	0.367	Invalid
5	T5	0.378	0.367	Valid
6	T6	0.414	0.367	Valid
7	T7	0.857	0.367	Valid
8	T8	0.656	0.367	Valid
9	T9	0.95	0.367	Valid
10	re 1	0.858	0.367	Valid
11	re 2	0.85	0.367	Valid
12	re 3	0.504	0.367	Valid
13	re 4	0.383	0.367	Valid
14	re 5	0.936	0.367	Valid
15	res 1	0.883	0.367	Valid
16	res 2	0.932	0.367	Valid
17	res 3	0.827	0.367	Valid
18	res 4	0.9	0.367	Valid
19	as 1	0.933	0.367	Valid
20	as 2	0.672	0.367	Valid
21	as 3	0.544	0.367	Valid
22	as 4	0.868	0.367	Valid
23	as 5	0.85	0.367	Valid
24	as 6	0.957	0.367	Valid
25	em 1	0.939	0.367	Valid
26	em 2	0.883	0.367	Valid
27	em 3	0.994	0.367	Valid

Based on the validity test of SPSS 21 software, it can be concluded that the statement attribute in the questionnaire is not the main target of measurement. Therefore, some of these attributes are removed from the attribute list to get valid data

**Table3.**

Test Reliability

Cronbach's Alpha	N of Items
0.971	25

**Table4.**  
Item Test Reliability

Item-Total Statistics				
	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
T1	28.4	812.524	0.617	0.971
T2	28.2	798.786	0.993	0.97
T3	29	809.793	0.357	0.972
T4	30.2	802.097	0.406	0.972
T5	29.6	782.317	0.862	0.97
T6	28.6	779.834	0.633	0.97
T7	28.8	723.476	0.939	0.968
re1	28.8	747.89	0.795	0.969
re2	28.8	770.648	0.834	0.969
re3	28.6	775.283	0.447	0.973
re4	28.6	798.041	0.331	0.973
re5	28.4	741.766	0.932	0.968
res1	28.4	746.731	0.873	0.969
res2	28.4	724.386	0.93	0.968
res3	28	744.828	0.817	0.969
res4	27.8	751.2	0.898	0.968
as1	28.2	729.683	0.92	0.968
as2	27.8	767.752	0.628	0.971
as3	28	785.793	0.508	0.971
as4	27.8	769.821	0.847	0.969
as5	28	761.379	0.837	0.969
as6	27.8	747.062	0.951	0.968
em1	28	740.276	0.934	0.968
em2	27.8	723.89	0.993	0.967
em3	28.4	742.179	0.858	0.969

Based on the table above, the alpha coefficient is 0.367, then this value is compared with r table with N = 27 (r Table 0.367). In conclusion Alpha = 0.971 > 0.367 which means that the research instrument is reliable. After getting the average score for each servqual dimension gap is obtained. Calculation results can be seen in table 5.

**Table 5.**  
Servqual Gap Analysis Based on Dimension

No	Indicator	Expectations	Satisfaction
1	Tangible	2.67	2.94
2	Reliability	3.15	2.88
3	Responsiveness	2.75	3.15
4	Assurace	3.13	2.47
5	Empathy	2.60	2.73

### Six Sigma Measurement

To determine DPMO magnitude and servqual dimension level then calculate. The results can be seen in table 6.

**Table 6.**  
 Measurement of Baseline Satisfaction in Outcomes by Dimensions

Variable	Indicator	Expectations (1)	Satisfaction (2)	Gap (3) = (2) - (1)	Target satisfaction on (4)	level of satisfaction (5) = [(2)/(4)]x100%	DPMO (6) = {1-(2)/(4)]} x1000000	Sigma (7)
Services	Tangible	2.67	2.94	0.28	4.00	0.74	264285.71	2.13
	Reliability	3.15	2.88	-0.27	4.00	0.72	280000.00	2.08
	Responsiveness	2.75	3.15	0.40	4.00	0.79	212500.00	2.30
	Assurance	3.13	2.47	-0.67	4.00	0.62	383333.33	1.80
	Empathy	2.60	2.73	0.13	4.00	0.68	316666.67	1.98

**Table7.**  
 Measurement of Baseline Satisfaction at Outcome by Attribute

Variable	Indicator	Expectations (1)	Satisfaction (2)	Gap (3) = (2) - (1)	Target satisfaction	level of satisfaction (5) = [(2)/(4)]x 100%	DPMO (6) = {1-(2)/(4)]}x 1000000	Sigma
	T1	3.8	2.6	-1.2	4	65 %	475000	1.89
	T2	4	2.6	-1.4	4	65 %	350000	1.89
	T5	3.4	2.8	-0.6	4	70 %	300000	2.02
	T6	3.4	2.9	-0.5	4	73 %	275000	2.10
	T7	3	3	0	4	75 %	250000	2.17
	T8	3.8	2.8	-1	4	70 %	300000	2.02
	T9	3.6	2.8	-0.8	4	70 %	300000	2.02
	re 1	3.4	2.6	-0.8	4	65 %	350000	1.89
	re 2	3.4	2.5	-0.9	4	63 %	375000	1.82
	re 3	4	3	-1	4	75 %	250000	2.17
	re 4	4.2	3.2	-1	4	80 %	200000	2.34
	re 5	4.2	3	-1.2	4	75 %	250000	2.17
Services	res 1	4.6	3.4	-1.2	4	85 %	150000	2.54
	res 2	4.4	3.2	-1.2	4	80 %	200000	2.34
	res 3	4.6	3	-1.6	4	75 %	250000	2.17
	res 4	4.8	3	-1.8	4	75 %	250000	2.17
	as 1	4.4	3	-1.4	4	75 %	250000	2.17
	as 2	4.2	2.4	-1.8	4	60 %	400000	1.75
	as 3	4	2.4	-1.6	4	60 %	400000	1.75
	as 4	4.2	2.4	-1.8	4	53 %	400000	1.75
	as 5	4	2.1	-1.9	4	60 %	475000	1.56
	as 6	4	2.4	-1.6	4	60 %	400000	1.75
	em 1	4	2	-2	4	60 %	500000	1.50
	em 2	4.4	2.6	-1.8	4	65 %	350000	1.89
	em 3	4.4	3.2	-1.2	4	80 %	200000	2.34

Baseline Measurement Performance at Dimensional Out Stage:

a. Significant Dimensions

In this dimension appears DPMO is 264285.714, which can be interpreted that from one million available opportunities there is 264285 possible service in the form of physical appearance that creates dissatisfaction for consumers. With sigma level of 2.13 and service satisfaction rate of 73%.

b. Reliability Dimensions

In DPMO this dimension is seen 280000 which can be interpreted that from one million chances there are 280000 services that may have been promised can not be implemented accurately and unreliable. With sigma level 2.08 and service satisfaction rate of 78%.

c. Responsive Size

In this dimension it looks like DPMO is 212500, which can be interpreted from a million opportunities there is 212500 which proves to be less responsive in serving users. With sigma level of 2.30 and service satisfaction rate of 78%.

d. Dimension Guarantee

In this dimension it looks like DPMO is 383333 which can be interpreted as a million existing opportunities there is 383333 which proves enough consumer confidence in guaranteed assurances to be fulfilled. With sigma level 1.98 and service satisfaction rate of 61%.

e. Empathy Dimensions

In this dimension appears DPMO is 316666 which can be interpreted that one million opportunities are available 316666 which proves that the feeling of empathy perceived by the user is still lacking. With sigma level 1.98 and service satisfaction rate of 68%.

#### IV. CONCLUSION

The introduction of user dimension of the consumer which is SERVQUAL and Six Sigma approach where user is asked to evaluate performance of service attribute there are 5 dimension which is tangible, reliability, responsive, guarantee. Alpha coefficient of reliability is 0.122 compared to Table r with N = 30 (r Table 0.367). So, Alpha = 0.971 > 0.367 which means the instrument has reliable research. Overall, it can be interpreted that the prose capacity of service at XYZ Television Subscribe is average at 2.06 sigma, with

DPMO 291357.142 and service satisfaction level of 71%. The biggest sigma level is on the Responsiveness dimension of 2.30 sigma with DPMO value of 212500 and satisfaction level as much as 78%, and the sigma level is the dimension of Empathy dimension that is equal to 1.98 sigma with the value of DPMO equal to 316666.666 and level of satisfaction equal to 68%. Based on the servqual and six sigma methods above, there are five attributes in the dimensions of service quality in *XYZ Television Subscribe* has high interest but has low performance. These five qualities are important for the quality aspect (CTQ) that need to be improved. Based on Critical to Quality identified, the next step is to determine the selection process that will be enhanced by mapping the company's business processes to provide an overview of the flow of information from the observed business services process.

1. The existence of guarantees relating to the items provided in accordance with the procedure is one of the Guaranteed attributes that has the lowest performance among other attributes.
2. The willingness to be called a user suddenly is one of the Empathy properties that has the lowest performance among other properties.

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## Appendix 1.

### Correlations Test

Correlations		T1	T2	T3	T4	T5	T6	T7	T8	T9	re1	re2	re3	re4	re5	res1	res2	res3	res4	as1	as2	as3	as4	as5	as6	em1	em2	em3	Totalscore	
T1	Pearson Correlation	1	.612**	.791**	-0.3	.875**	-0.2	.559**	.791**	.825**	.930**	.943**	.527**	0.35	.563**	.563**	.464**	.401*	.408*	.431*	0.06	-0.2	.514**	0.15	.408*	.431*	.600**	.814**	.633**	
	Sig. (2-tailed)		0	0	0.18	0	0.3	0	0	0	0	0	0	0.06	0	0	0.01	0.03	0.03	0.02	0.74	0.24	0	0.44	0.03	0.02	0	0	0	
	N	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30		
T2	Pearson Correlation	.612**	1	0	0.1	.408*	.480**	.913**	.645**	.926**	.807**	.840**	.430*	0.29	.919**	.919**	.968**	.890**	.944**	.924**	.612**	.542**	.840**	.843**	.944**	.955**	.980**	.854**	.990**	
	Sig. (2-tailed)		0		1	0.59	0.03	0.01	0	0	0	0	0	0.02	0.12	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	N	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	
T3	Pearson Correlation	.791**	0	1	-.395*	.791**	.620*	0	.500**	0.33	.551**	.542**	0.33	0.22	0	0	-0.2	-0.2	-0.2	-0.2	-.395*	.699*	0	.466*	-.2	-.2	0	.368*	0.033	
	Sig. (2-tailed)		0	1		0.03	0	0	1	0.01	0.08	0	0	0.07	0.24	1	1	0.39	0.34	0.25	0.37	0.03	0	1	0.01	0.25	0.3	1	0.05	0.861
	N	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	
T4	Pearson Correlation	-0.3	0.1	-.395*	1	.688*	-0.2	-0.3	.395*	0.05	-0.2	-0.1	0	0.18	0.09	0.09	0.08	-0	0.07	.431*	.844**	.700**	.514**	.516**	.408*	0.28	0.19	0.23	0.193	
	Sig. (2-tailed)		0.18	0.59	0.03		0	0.3	0.14	0.03	0.79	0.22	0.5	1	0.35	0.62	0.62	0.69	0.88	0.72	0.02	0	0	0	0.03	0.14	0.31	0.22	0.306	
	N	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	
T5	Pearson Correlation	.875**	.408*	.791**	.688*	1	-0	.559**	.791**	.593**	.814**	.772**	.395*	0.18	.375*	.375*	0.31	0.32	0.27	0.11	-.375*	.516*	0.13	-.1	0.1	0.19	0.36	.494**	.378*	
	Sig. (2-tailed)		0	0.03	0	0		0.8	0	0	0	0	0	0.03	0.35	0.04	0.04	0.1	0.09	0.15	0.57	0.04	0	0.5	0.44	0.59	0.33	0.06	0.01	0.039
	N	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	
T6	Pearson Correlation	-0.2	.480**	.620*	-0.2	-0	1	.658**	0.31	0.24	0.16	0.07	0.21	0.14	.564**	0.32	.566**	.540**	.587**	0.34	0.17	.405*	0.07	.549**	.454*	.459*	.471**	-0	.414*	
	Sig. (2-tailed)		0.3	0.01	0	0.3	0.8		0	0.1	0.2	0.4	0.72	0.27	0.47	0	0.09	0	0	0	0.07	0.37	0.03	0.72	0	0.01	0.01	0.01	0.81	0.023
	N	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	
T7	Pearson Correlation	.559**	.913**	0	-0.3	.559**	.658**	1	.707**	.807**	.780**	.767**	0.35	0.16	.839**	.839**	.923**	.898**	.913**	.723**	0.28	0.33	.575**	.659**	.761**	.826**	.854**	.650**	.857**	
	Sig. (2-tailed)		0	0	1	0.14	0	0		0	0	0	0	0.06	0.4	0	0	0	0	0	0	0.14	0.08	0	0	0	0	0	0	0
	N	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	
T8	Pearson Correlation	.791**	.645**	.500**	.395*	.791**	0.31	.707**	1	.815**	.919**	.813**	.833**	.671**	.791**	.395*	.489**	.363*	.430*	0.34	0	-0.2	0.27	0.23	.430*	.389*	.690**	.551**	.656**	
	Sig. (2-tailed)		0	0	0.01	0.03	0	0.1	0		0	0	0	0	0	0.03	0.01	0.05	0.02	0.07	1	0.22	0.15	0.22	0.02	0.03	0	0	0	0
	N	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	
T9	Pearson Correlation	.825**	.926**	0.33	0.05	.593**	0.24	.807**	.815**	1	.947**	.955**	.652**	.511**	.915**	.786**	.809**	.686**	.758**	.801**	.503**	0.27	.778**	.654**	.828**	.800**	.945**	.911**	.950**	

**Continue...**

**Continue...**

as6	Pearson Correlation	.408*	.944**	-0.2	.408*	0.1	.454*	.761**	.430*	.828**	.617**	.677**	0.36	0.29	.868*	.868*	.926**	.827**	.907**	.983**	.834**	.762**	.910**	.963**	1	.972**	.950**	.807**	.957**	
	Sig. (2-tailed)	0.03	0	0.25	0.03	0.59	0.01	0	0.02	0	0	0	0.05	0.12	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
	N	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30		
em1	Pearson Correlation	.431*	.955**	-0.2	0.28	0.19	.459*	.826**	.389*	.800**	.615**	.697**	0.2	0.09	.800*	.954**	.978**	.932**	.972**	.982**	.739**	.744**	.908**	.926**	.972**	1	.913**	.816**	.939**	
	Sig. (2-tailed)	0.02	0	0.3	0.14	0.33	0.01	0	0.03	0	0	0	0.3	0.65	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	N	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	
em2	Pearson Correlation	.600**	.980**	0	0.19	0.36	.471**	.854**	.690**	.945**	.812**	.823**	.575**	.463**	.968**	.832**	.912**	.788**	.876**	.906**	.668**	.531**	.823**	.853**	.950**	.913**	1	.837**	.994**	
	Sig. (2-tailed)	0	0	1	0.31	0.06	0.01	0	0	0	0	0	0	0.01	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	N	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30
em3	Pearson Correlation	.814**	.854**	.368*	0.23	.494**	-0	.650**	.551**	.911**	.824**	.917**	.368*	0.25	.712**	.857**	.767**	.693**	.728**	.852**	.596**	.377**	.917**	.634**	.807**	.816**	.837**	1	.883**	
	Sig. (2-tailed)	0	0	0.05	0.22	0.01	0.81	0	0	0	0	0	0.05	0.19	0	0	0	0	0	0	0	0.04	0	0	0	0	0	0	0	0
	N	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30
Totalscore	Pearson Correlation	.633**	.990**	0.03	0.19	.378*	.414*	.857**	.656**	.950**	.818**	.850**	.504**	.383*	.936**	.883**	.932**	.827**	.900**	.933**	.672**	.544**	.868**	.850**	.957**	.939**	.994**	.883**	1	
	Sig. (2-tailed)	0	0	0.86	0.31	0.04	0.02	0	0	0	0	0	0.01	0.04	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	N	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30

\*\* Correlation is significant at the 0.01 level (2-tailed).

\* Correlation is significant at the 0.05 level (2-tailed).